Teaching in the Open

Dr. Karen Cangialosi
Keene State College
@karencang
Biology is designed to cover the scope and sequence requirements of a typical two-semester biology course for science majors. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology includes rich features that engage students in scientific inquiry, highlight careers in the biological sciences, and offer everyday applications. The book also includes clicker questions to help students understand—and apply—key concepts.

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Student Loan Debt Statistics In 2019: A $1.5 Trillion Crisis

Through the roof: Student loan debt in the U.S.
The amount of student loan debt in the United States has shot up over 200 percent since 2006.

Source: Federal Reserve
Chart: Robin Muccari / NBC News
• In a study of 3,000 public college/university students, HALF of the students left without a degree, but with crippling debt.

• 23% of low-income sophomores worked a job between the hours of 10:00pm and 8:00am.

• The average net price for a year at community college equals 40% of a low income family’s annual income.

• A year at a public university ranges from 16-25% of a middle-class family’s annual income.

Modified from Slide by Robin DeRosa [CC BY 4.0]
Survey of 33,000 students at 74 community colleges in 24 states

- 67% are Food Insecure
- 50% are Housing Insecure
- 13-14% are Homeless
- Prevalent in all regions of the country

From: Hungry and Homeless in College: Results from a National Study of Basic Needs Insecurity in Higher Education, 2017, by Sara Goldrick-Rab, Jed Richardson and Anthony Hernandez, the Wisconsin HOPE lab

ABOUT
THE HOPE CENTER

Too many students leave college without credentials because life, logistics, and a lack of money got in the way. These #RealCollege students are the new majority, but they are often ignored. The Hope Center for College, Community, and Justice is home to an action research team using rigorous research to drive innovative practice, evidence-based policymaking, and effective communications to support #RealCollege students.

READ MORE

https://hope4college.com/
KSC’s Food Pantry – The Hungry Owl
Chart 1: Impact of Textbook Costs on Students

- Take fewer courses: 47.6%
- Don't register for a specific course: 45.5%
- Drop a course: 26.1%
- Withdraw from a course: 20.7%
- Earn a poor grade because I could not afford to buy the textbook: 37.6%
- Fail a course because I could not afford to buy the textbook: 19.8%
- Don't purchase the required textbook: 66.6%

22,000 students in the study
Open Educational Resources by Ron Mader [CC BY 2.0]

• Free
Students in Courses using OER compared to non-OER

- Increase in course throughput rates
- Improve end-of-course grades and decrease DFW rates for all students
- Reduction in DFW rates for minority and Pell eligible students
- Lower course withdrawal rates
- Higher % of students completing course with a C or better

Compilation of results from many studies from colleges/universities in the United States and Canada
• The Keene State College Biology dept has collectively saved our students over $250,000 over the last 4 years.

• Many Colleges and Universities in the U.S. and Canada have already saved students MILLIONS of dollars in textbooks costs.
OpenStax.org

Anatomy
Physiology
Astronomy
Biological Concepts
Microbiology

LibreText Project

Chemistry
Physics

OERcommons.org

Discover. Share. Create.

REBUS Community

Home / Open Textbook Projects in Development

How to start a new open textbook project

[ARCH] Introduction to North American Archaeology

[NUH] Northern & Indigenous Health and Healthcare

[GEO] Human Geography: Principles and Applications

[EDU] Guide: Making Open Textbooks With Students

[EDU] Blueprint for Success in College and Career
This text is primarily designed to serve as a textbook for a college-level music theory fundamentals course. However, it also has the flexibility to serve equally well for a typical core curriculum college-level Music Theory I or Harmony I course. Our goal is to deliver sufficient information to enable the student to be able to evaluate and analyze select music from the literature as quickly as is practical. Secondly, we seek to provide sufficient instruction to enable a student to begin writing music as quickly as is practical. In order to develop a complete argument, it is important that the student understand that this text “assumes a blank slate.” No prior knowledge on the part of the student is assumed.

1: The Elements of Rhythm: Sound, Symbol, and Time

2: The Elements of Pitch: Sound, Symbol, and Tone

3: The Foundations Scale-Steps and Scales
Incidents of gun violence in San Antonio in 2018, according to the Gun Violence Archive. This dataset was published by the Rivard Report in "Tierrabyte: Zoning Emerges as Contested Tool for Gun Control."

The definition of gun violence varies. The Gun Violence Archive’s methodology describes their definition as “fully inclusionary of disparate elements of gun-related incidents,” including accidental shootings, crimes involving guns, or drivebys.

http://www.gunviolencearchive.org/methodology

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Free as in “Free Beer”

Photo by Elliot Bledsoe [CC BY 2.0]
Free But Not Open
The Open License

Not just “free”, but Open.

Creative Commons licenses explained
©Foter (adapted by Jisc) via Foter blog
CC BY-SA
“Using OER the same way we used commercial textbooks misses the point. It’s like driving an airplane down the road.” – David Wiley
FREE as in Freedom (the 5 R’s)

- Reuse
- Revise
- Remix
- Redistribute
- Retain
Open Educational Resources by Ron Mader [CC BY 2.0]

- Digital
- Multimedia
- Downloadable
- Adaptable
- Current
- Public
- Openly Licensed
- Free
• “Traditional” OER as textbook (e.g. pressbooks)
• Ancillary materials: test banks, study guides, lesson plans, etc
• Curated links on websites
• Open Google Docs
• Open Access published articles
• Open Datasets
• Open Lab notebooks and Methods repositories
• Open Videos
• Open Lab Simulations
• Open Source software/tools
• and more…
Open Pedagogy

- Community and collaboration, sharing resources, ideas and power
- Connection to the wider public
- Learners contribute to, not just consume knowledge
- Student Agency, Learner-driven
- Critical approach to the use of tools and technology

Modified from content by Robin DeRosa

‘Floor at domains17’ by Karen Cangialosi [CC BY 4.0]
OPEN is about Access

- Learning Structure Design
- Community Participation
- Knowledge Sharing
- Knowledge Creation
- Knowledge
“When my students gain access to knowledge, I want it to be part of a larger invitation: we trust that you have important lessons to teach the world, and we trust that the knowledge you access today will be changed by your perspective, that you will open doors to new ideas that we, your current teachers, never could have taught you.” – Robin DeRosa, *University of the Margins*
II. Harmful Algal Blooms

Ever been told to only eat shellfish during the months that have the letter “R”, (September-April)? Well this rule is actually pretty important for keeping the health of people safe and to allow for many species of shellfish to repopulate. But why are the other months of the year not safe for people to eat shellfish? In short its because of the algae that grow during this time of year and as ocean temperatures rise. During these specific months of warmer weather, billions upon billions of these microorganisms start to take over our oceans and can have many consequences on us.
Environmental ScienceBites

Edited by Kylienne A. Clark, Travis R. Shaul, and Brian H. Lower


This book was written by undergraduate students at The Ohio State University (OSU) who were enrolled in the class Introduction to Environmental Science. The chapters describe some of Earth’s major environmental challenges and discuss ways that humans are using cutting-edge science and engineering to provide sustainable solutions to these problems.

LICENSE

Environmental ScienceBites by Kylienne A. Clark, Travis R. Shaul, and Brian H. Lower is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License, except where otherwise noted.
Students can create ancillary materials for OER textbooks

Why have students answer questions when they can write them?

I recently trialled a new assignment in my Social Psychology class: During each of the 10 weeks when there was no scheduled exam I asked my students to write multiple-choice questions. That’s right, they wrote questions instead of merely answering them.

From a pedagogical perspective, I really wanted my students to achieve a deeper level of understanding (e.g., the level it takes in order to craft three plausible distractors). However, this assignment also served a pragmatic purpose in that the open textbook that I use for this course (and that I helped revise) does not yet have a readymade question bank. By asking my students to craft and peer-review multiple-choice questions based on the concepts covered that week (and scaffolding this process over the semester), I considered I had a budding open pedagogy project on my hands.

Here’s how it went:
OER doesn’t have to look like a typical textbook
Discover who you want to become by what you want to share

DIGITAL IDENTITY
Take ownership of your presence on the web. Express your ideas. Integrate your learning and interests.

DIGITAL FLUENCY
Use open-source platforms. Build projects using digital tools. Create portfolios, exhibits, galleries, blogs, or

DIGITAL CITIZENSHIP
Engage with the community. Construct the web. Navigate, and critically question digital technologies.
• Interactive
• Collaborative
• Contributory
• Dynamic
• Empowering
• Participatory
Contribute to, not just consume from, the knowledge commons

- Robin DeRosa

NATURE, NURTURE, MURDER?

Posted on March 27, 2017 by thechcexplored in Evolution and Human Behaviour

It has been found in many studies that male children who abused or experience violence are more likely to be violent when they grow up – but not all male children who experience violence whilst growing up turn out to be violent people. Some may ask, well what about alcohol abuse or drug abuse? Finances, education, or up-bringing? While all of these environmental factors have been linked to aggressive behavior, behaviorists are having a difficult timing creating strong correlations between aggressive/violent behavior and environment alone. This has forced geneticists to ask the question that many had been hoping to avoid – is there a gene for violent behavior?

Stephen King begins his (very well-known) article Why We Crave Horror Movies with a very bold claim, “I think that we’re all mentally ill...”. He goes on to explain that he believes that insanity is a spectrum of control that sneaks from mumbles uninterligibly to yourself (when you’re frustrated) to cutting off...
Bioinformatics

Scroll Down For Blog Posts

CLASS NOTES
• Students create, remix and openly license work that is shared with others.

• Student work lives on past the end of the semester (if they want it to).

“Open is not the opposite of private” Robin DeRosa
What is NH Science for Citizens?

We are students and faculty at Keene State College working on community-relevant environmental issues in New Hampshire. We focus on both the science and the policy making process.

Our goal is to help the citizens and legislators of New Hampshire make informed policy choices. This website and corresponding social media channels are intended to provide a portal where interested parties can learn and converse.

We welcome inquiries from members of the public who might have a concern in their neighborhood or community. We also welcome other professionals to join us.
Audience Beyond the Professor, Connecting to the Public

ALANA OLENDOFF E-PORT

April 11, 2017
SCREENCAST 1: CORAL REEFS

March 27, 2017
SPRING BREAK, FUN OR HARMFUL?

March 16, 2017
THE RED TIDE
“It was a drastic and honestly scary change going from a traditional learning course where I only have my instructor’s opinion to worry about.” - Invertebrate Zoology student
Students write about local contamination sites and potential consequences to humans and wildlife as public service.

Toxic Phthalates are in Everything...

Why Phthalates?

Now that we know some background about phthalates and the health effects on male children how does this apply to our community? Currently all 50 states had or currently have a superfund site. The Environmental Protection Agency defines a superfund site as “any land in the United States that has been contaminated by hazardous waste and identified as a candidate for cleanup because it poses a risk to human health and/or the environment.” (Environmental... 2015). In New Hampshire the EPA identifies over twenty superfund sites in our state alone. One of those superfund sites is located in the next town over from my college. This is known as the Troy Mills and is found to contain phthalates that seemed to contaminate the nearby water supply. New Hampshire Department of Environmental Sciences regularly mentors this site and works directly with the EPA. All this information is public and can be found here to obtain more information about other superfund sites in New Hampshire.

The Troy Mills went into bankruptcy in 2003 therefore it was forced to close. The landfill was then added as a superfund site that fall. It was discovered that over eleven acres of property was used as an industrial waste disposal area from 1997 to 2001. This landfill had disposal drums of liquid waste of exempts, organic solvent, and plasticizers stored underground. Within the next year the EPA removed over 8,500,000 cubic yards of contaminated soil from the site. New soil was added, and a cap was placed over the former area. Due to the contamination of phthalates the site is required to have long-term environmental monitoring. Although, the site was cleaned up the phthalates did leak into the environmental and can be responsible for endocrine disruption in the human population around this area. Since you know phthalates are responsible for adverse reproductive development why should you NOT be concerned for this community.

How do these Phthalates effect the reproductive system of males?

On a more local note huge source of phthalate contamination in New Hampshire comes from the Troy Mills Superfund site located in Troy, NH. This site was once the former drum disposal area for Troy Mills Inc. The Environmental Protection Agency (EPA) did clean up the site. But, there was still a lot of phthalate contamination that couldn't be removed. This caused contamination of runoffs and then groundwater in the area. This threat to invertebrates population and health, as highlighted in the papers above, can be detrimental.
Some Useful links for Open Education

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Assignment Database

Be aware that since you can edit this document, be careful not to accidentally delete anything. (Use the undo button for mistakes.)

Fall 2018
Bio Seminar

These are assignments that you can complete this semester. Also please create your own assignments and add to this assignment database. Others may also want to do your assignments. Once you have added an assignment, let the class know by sending a tweet to the course hashtag and linking to this spreadsheet.

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<th>Description</th>
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<td>Tues Sep 4</td>
<td>Beginning Thoughts Post</td>
<td>Karen Cangialosi</td>
<td>Write and post to your site, about your current concerns, fears, excitement – any feelings about your future after leaving KSC. This is not meant to be your complete after graduation plans and steps - it is just a starting point to consider where you are right now. Put the link in the class spreadsheet by Tues Sep 4.</td>
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<td>Mock Interviews</td>
<td>Anna</td>
<td>Meet with biology faculty and participate in a mock interview. The interview can be either focused on an interview for a job or graduate school. Share your interview experience via twitter or a blog post.</td>
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<td>October 4th</td>
<td>TEDxKeene event</td>
<td>Max &amp; Suki</td>
<td>Attend the TED talk in Keene, have some fun, learn something new, write a blog post. Where: When, &amp; Ticket info at: <a href="https://t.co/B2Doy9oFRI">https://t.co/B2Doy9oFRI</a></td>
</tr>
<tr>
<td></td>
<td>The political is personal!</td>
<td>Collin</td>
<td>How do the politics of our country and the world relate to your work? What do you do as a scientist to contribute to the community?</td>
</tr>
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<td>October 15th</td>
<td>NHSTA Conference</td>
<td>Kaitlyn</td>
<td>Attend the New Hampshire Science Teacher Association conference in Meredith, NH. Write a blog post about the sessions you attended (feel free to live-Tweet, if appropriate) and the neighborhoods, programs, and resources you found at the tables in-between sessions.</td>
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<td>multiple</td>
<td>Career Clinic</td>
<td>Kaitlyn</td>
<td>Create a vision board, either digitally or in person. Add a picture or file of it to a blog post and explain in detail how at least 3 of the goals/pictures are on your vision board, and what steps you need to take to reach the goal, if applicable. Check out this link: <a href="https://www.wikihow.com/Make-A-Vision-Board">https://www.wikihow.com/Make-A-Vision-Board</a> if you need inspiration on how to create a vision board. Don't forget to give credit for the pictures you use!</td>
</tr>
<tr>
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<td>Create a Vision Board</td>
<td>Rachel</td>
<td>As scientists we are bound to do research at some point in our careers. Write a blog post about...</td>
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Creating/Editing Wikipedia Articles

[Diagram showing the process of teaching with Wikipedia]

Create or Expand an article
- Students research and write an article from scratch, or expand a shorter article.
- Course with fewer than 50 students.
- 6 - 12 weeks alongside regular syllabus coursework.

Translate an existing article
- Students translate high-quality articles from language they are studying to share on Wikipedia of their native language.
- Course with fewer than 30 students.
- 4 - 5 weeks alongside syllabus.

Create new media and upload
- Students produce original media content and upload to Wikimedia Commons.
- Any size course.
- 1 - 2 weeks alongside syllabus.

GREAT FIT FOR: MOST DISCIPLINES, REPLACING WRITING OR RESEARCH PROJECT

GREAT FIT FOR: LANGUAGE/APPLICATION, ESL

GREAT FIT FOR: JOURNALISM, ART/MULTI-MEDIA, ETC.
“How do you go find the other people, the other voices?” - WVU Teaching Assistant Prof. Mary Kay McFarland

Fixing Gender Bias Is Complicated

This academic year, we experimented with our Introduction to Photojournalism course to see just how we might help. Here at West Virginia University, we held a “Tackling the Gender Gap” session during Spring 2015. Although I was not yet a professor at WVU, I read about it on social media and felt it was an important issue.

Once on campus in Fall 2015, I charged students with writing biographical articles on photographers to counter Wikipedia's gender bias against not only women, but people of color, as well.

My class was shocked by the assignment, and so were other classes in the spring. “Up until now, I was told ‘stay away from Wikipedia,’” WVU student Rachel Solis said.

“It’s a big NO-NO,” classmate Aishina Shaffer added. They responded to the charge of researching and writing for the world, rather than an audience of one (me, the professor).
Web Annotation for Community & Collaboration

Review several ecological factors that can limit the ability of coral reefs to withstand disturbance. These include: (1) Many species lack the adaptive capacity to cope with the unprecedented disturbances they currently face; (2) human disturbances impact vulnerable life history stages, reducing reproductive output and the supply of recruits essential for recovery; (3) reefs can be vulnerable to the loss of few species, as niche specialization or temporal and spatial segregation makes each species unique (i.e., narrow ecological redundancy); in addition, many foundation species have similar sensitivity to disturbances, suggesting that entire functions can be lost to single disturbances; and (4) feedback loops and extinction vortices may stabilize degraded states or accelerate collapses even if stressors are removed. This review suggests that the degradation of coral reefs is due to not only the severity of human stressors but also the “fragility” of coral reefs. As such, appropriate delivery of goods and services is definitely needed.

Keywords: Diversity - Ecological - Livelihood - Marine - Loss - Conservation - Stoichiometry

Introduction

Coral reefs constitute one of the most economically important and threatened ecosystems in the world (Wilkinson 2002; Bell 2011). Coral reefs harbor the greatest biodiversity on Earth (Kuda 1997; Fisher et al. 2011). However, their global health has declined due to the loss of key species that provide goods and services to millions of coastal populations from every continent (Wilkinson 2002; Adger et al. 2003). Unfortunately, the world’s coral reefs are in decline (Wilkinson 2002; Bellwood et al. 2004) with ~19% of the total coral reefs (Wilkinson 2002) and 60–70% of reefs (Wilkinson 2002; Burq et al. 2015) have been affected by major disturbances (Goreau et al. 1975), the majority of which arise in live coral cove...
Using Digital Tools for developing a Personal Learning Network for Connecting with Peers, Professionals and Academics

Twitter

Research Gate

LinkedIn

Keene State College Biology Community and Alumni

Start a new conversation in this group

Karen Cangialosi
Professor of Biology, Coordinator of Faculty Enrichment, Keene State College

The KSC biology dept just received word that Novo Nordisk is looking for two people in entry level positions. Check out the details here: https://lnkd.in/dU8vb4v
Let me know if you are interested, we have a direct line to the supervisor ...
see more

QC Microbiologist Job	novonordisk-jobs.com
QC Microbiologist Job

ResearchGate

Advance your research
Discover scientific knowledge, and make your research visible.

“Revolutionizing how research is conducted and disseminated in the digital age.”
Los Angeles Times
Open provides tangible pathways from the classroom to future jobs and careers.
Students can work with faculty to:

- Create Content
- Write the syllabus
- Determine what goes on during class
- Write the attendance policy
- Determine how they will be graded
- Create learning outcomes
- Design assignments
- Decide what they want to make public
- Decide whether or not to openly license their work
More than 60% of college students (in a study of 88,000) said they had experienced “overwhelming anxiety” in the past year, according to a 2018 report from the American College Health Association.

Over 40% said they felt so depressed they had difficulty functioning.

Source: https://www.nytimes.com/2019/02/21/education/learning/mental-health-counseling-on-campus.html

In 1985, 18% of college-bound seniors said they “frequently” felt “overwhelmed by all I had to do” during senior year of high school.

That number had increased to 41% by 2016.

Source: https://willowresearch.com/gen-z/
An atmosphere that places greater value on “achievement” than on learning

Standardized tests and assessments that suck the life out of learning

Surveillance systems that track, monitor, punish, and insist on compliance
“a stay of execution”

“students just know how to work the system”

“students will cheat if they can get away with it”

“they are grade-grubbers”

“they don’t know anything we taught them at the 100 level”

Stop Blaming Students
Open Pedagogy: Student Trust, Agency, and Empowerment

Other Systemic Problems:
- Economic
- Environmental
- Social and Cultural

Systemic issues in Education:
- Standardization
- Grades-Focus
- Surveillance
- High Cost

Open Pedagogy: Students Create and Share knowledge

OER: Cost Savings

Student Anxiety, Financial stress, Powerlessness
CONSERVATION WITHIN PUBLIC SCHOOL

In class, we had a conversation about the role that public schools have in teaching students about conservation. Many of the students within the class and responding to my twitter talked about how they only learned about climate change and its effects within their AP courses in high school. As an education major, I was a little bit upset by this fact. Mainly because of something that we have learned within my education class that AP courses are unavailable to so many different student populations. This includes students that live in a low-income household, and students with disabilities. Every student should have equal access to this content. The only way to ensure that is providing all students information about climate change and conserv – – –

However, another thing I have learned throughout my time here at Keene State Collq teachers have so many responsibilities. They are required to teach their content base district expectations. Some teachers are even given directions on what to teach when and how. Teachers are also required to teach with national standards. For science they are known as the Next Generation Science Standards. They outline the topics that students should be able to demonstrate at certain grade levels. Teachers are als – – –

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RESOURCES FOR TEACHERS

In my first blog post I began writing about the challenges that effect both teachers and students with conservation and learning about climate change. It then made me interested in what free and available resources for teachers to use. I was also interested if there were any resources available that teachers could give students as an opportunity to learn on their own. I was pleasantly surprised by the free access content.

I began my research on resources by looking at the National Science Teacher Association. I officially became a member in the fall of 2018. When you open the website and you go under books, journals, and resources one of the first specific-focus cites is climate science resources. NSTA states that they have made a position statement they want “greater support for science educators in teaching evidence-based science, including climate science and climate change”. On this site, they include eBooks and books that provide resources for climate change education. However I want to provide information for teachers and others that are free. One thing I will make note of is that these lessons and information is a great starting place however, you should and will have to make adjustments to the materials to meet the needs of all your students.

One of the first websites I saw was the National Oceanic and Atmospheric Association. This is a resource that includes literacy and data interpretations for students to look at. It provides students to look videos, worksheets, and labs to learn more about climate change.
Kwantlen Polytechnic University (KPU) and Montgomery College, International Partnership

United Nations Sustainable Development Goals Open Pedagogy Fellowship
“Open is a process, not a panacea”

-Robin DeRosa
Trolls!

Fake News!

Stuff that's wrong!

Stuff that's irrelevant!
(Who cares what you had for dinner?)
Students will go online ANYWAY; they will have a digital presence WITH or WITHOUT your guidance.

Is it responsible to “just say no” to:

• Smartphone use?
• Using social media?
• Reading, posting and interacting on the web?

If faculty and staff in higher education don’t guide students to think about digital citizenship and their digital footprint – who will?
Don’t start with the tools
• What are some ways to make education more accessible and equitable for all students? (Open for whom?)

• How do we authentically give our students voice and power in the design of learning structures?

• How do we help the public see the value in what our students are achieving?

• How can we provide transformational (not just transactional) experiences for our students?

• How might we inspire students to become agents of social change?
“Education is vital to the creation of individuals capable of becoming critical social agents willing to struggle against injustices and develop the institutions that are crucial to the functioning of a substantive democracy.”  -Henry Giroux